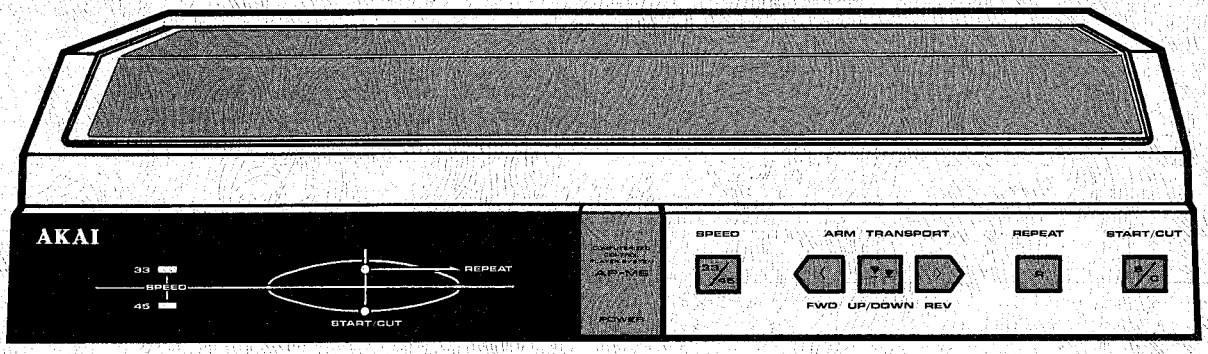
AP-M5

AKAI SERVICE MANUAL



DD FULL AUTO TURNTABLE

MODEL AP-M5/S

ABBREVIATIONS FOR SERVICE MANUAL
MODEL AP-M5/S

ABBREVIATION	EXPLANATION
F.FWD	Fast ForWarD
FG	Frequency Generator
F.REV	Fast REVerse
GND	GrouND
H	High
L	Low
LED	Light Emitting Diode
M	Motor
MI-COM	MIcro COMputer
PH	PHoto sensor
R	Repeat
REMO CON	REMOte CONtrol
REV	REVerse
S/C	Start/Cut
SW	SWitch
VMS	Variable Magnetic Shunt (Cartridge)
X'tal	Crystal

DD FULL AUTO TURNTABLE

MODEL AP-M5/S

THIS MANUAL IS APPLICABLE TO BOTH SILVER
AND PEARL SHADOW PANEL MODELS

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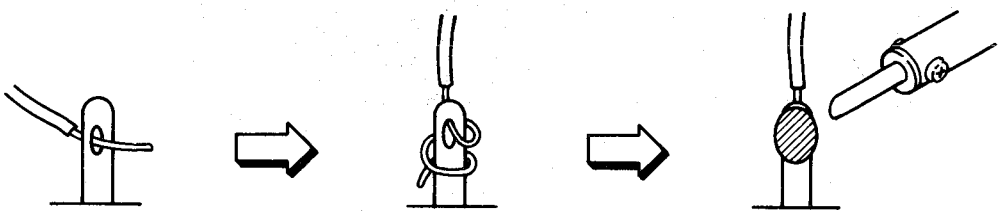
SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks. line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SECTION 1

SERVICE MANUAL

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For basic adjustments, measuring methods, andoperating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

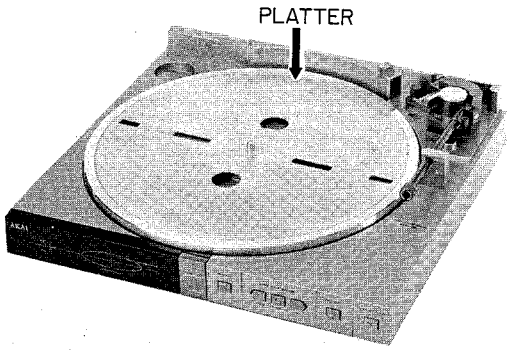
TURNTABLE (PLATTER)	297 mm Aluminum Alloy Diecast
DRIVE SYSTEM	F/V Servo Direct Drive Full Automatic
MOTOR	DC Servo Motor
SPEED	33-1/3 & 45 rpm
WOW & FLUTTER	0.03% (W.RMS)
RUMBLE	75 dB (DIN-B)
TONEARM	Static Balanced Type
EFFECTIVE ARM LENGTH	205 mm
STYLUS ARM PRESSURE ADJ RANGE	0 to 2.5g
APPLICABLE CARTRIDGE WEIGHT	3 to 7g
ARM LIFTER	Oil Damped
OVERHANG	18.8 mm
SHELL WEIGHT	3.2g
CARTRIDGE	VMS Type (Ortofon SMB-5) (Model AP-M5S does not include cartridge)
OUTPUT VOLTAGE	5 mV (DIN)
CHANNEL SEPARATION	22 dB
OPTIMAL STYLUS PRESSURE	1.8g
POWER REQUIREMENT	100V, 50/60 Hz for Japan 120V, 60 Hz for USA & Canada 220V, 50 Hz for European Countries 240V, 50 Hz for UK & Australia 110–120V/220–240V, 50/60 Hz Switchable for other countries.
POWER CONSUMPTION	10W
DIMENSIONS	350 (W) x 88 (H) x 320 (D) mm (13.8 x 3.5 x 12.6 inches)
WEIGHT	4.3 kg (9.5 lbs)

*** For improvement purposes, specifications and design are subject to change without notice.**

II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

3



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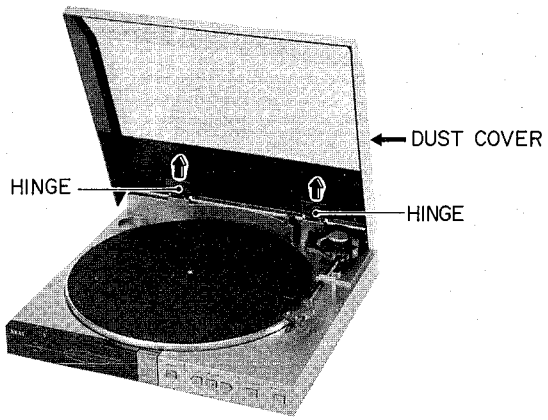

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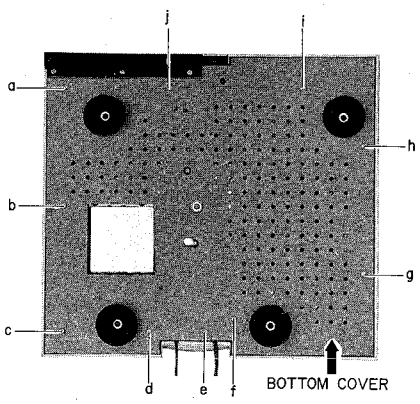

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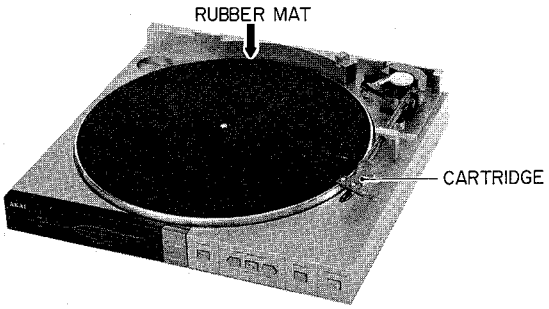

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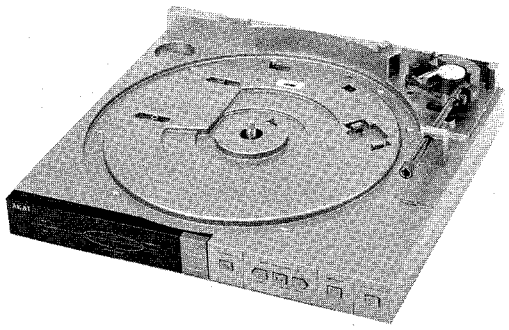


III. CONTROLS

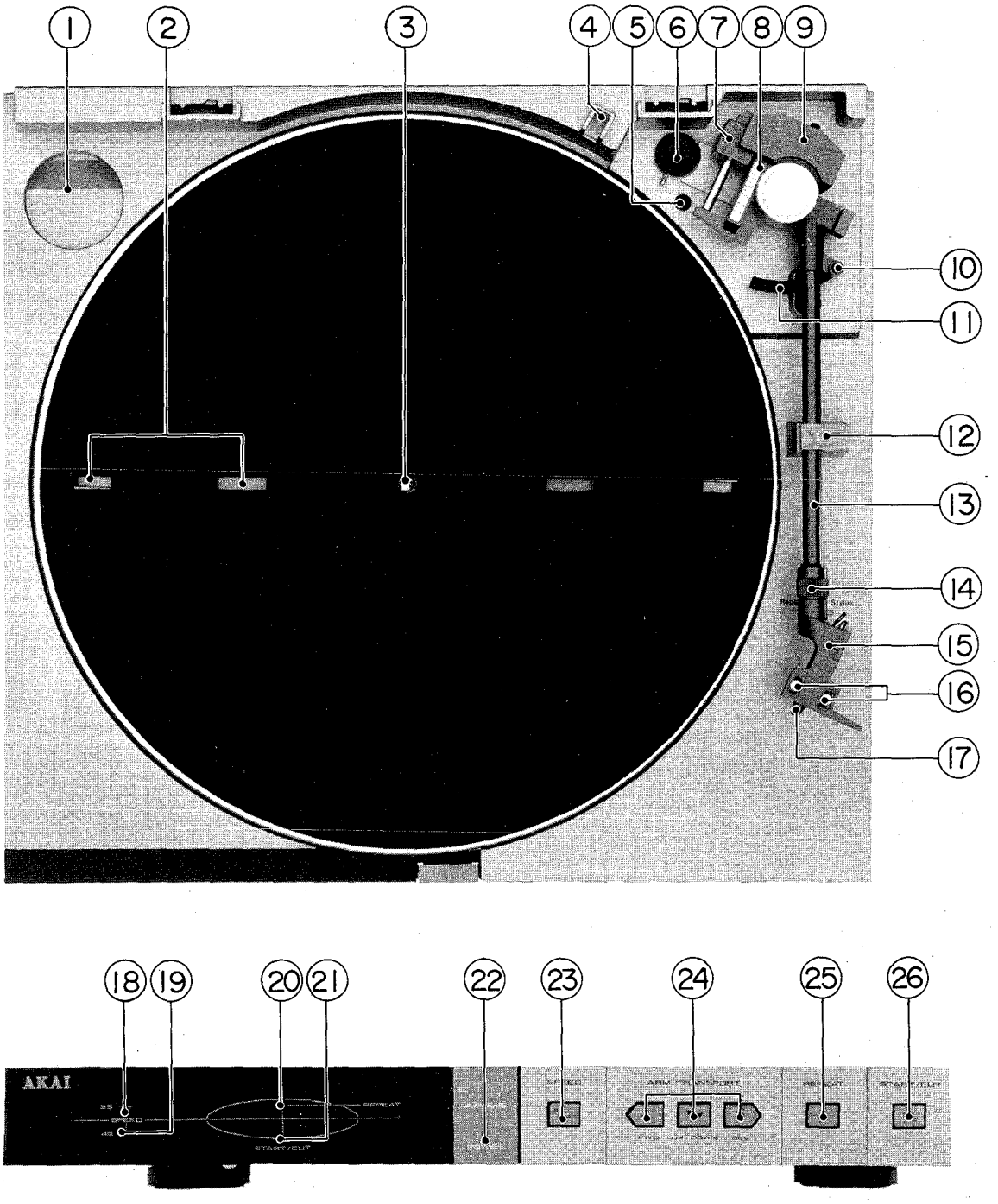


Fig. 3-1 Controls

1. 45 RPM ADAPTER HOLDER
2. RECORD SENSING HOLES
3. SPINDLE
4. SENSOR ILLUMINATOR
5. AUTO LEAD-IN ADJUSTMENT SCREW
6. ANTI-SKATING ADJUSTER
7. STYLUS PRESSURE SUBWEIGHT
8. STYLUS PRESSURE SCALE
9. MAIN WEIGHT
10. TONE ARM HEIGHT ADJUSTMENT SCREW
11. TONE ARM LIFTER
12. TONE ARM REST AND CLAMP
13. TONE ARM
14. LOCKING RING
15. HEAD SHELL
16. CARTRIDGE RE-SETTING SCREW
17. CARTRIDGE (AP-M5 ONLY)
18. 33 1/3 RPM SPEED INDICATOR
19. 45 RPM SPEED INDICATOR
20. REPEAT INDICATOR
21. START/CUT INDICATOR
22. POWER SWITCH
23. SPEED SELECTOR (33/45)
24. FWD (<), UP/DOWN (▼ ▼) and REV (>) BUTTONS
25. REPEAT (R) BUTTON
26. START/CUT (S/C) BUTTON

IV. PRINCIPAL PARTS LOCATION

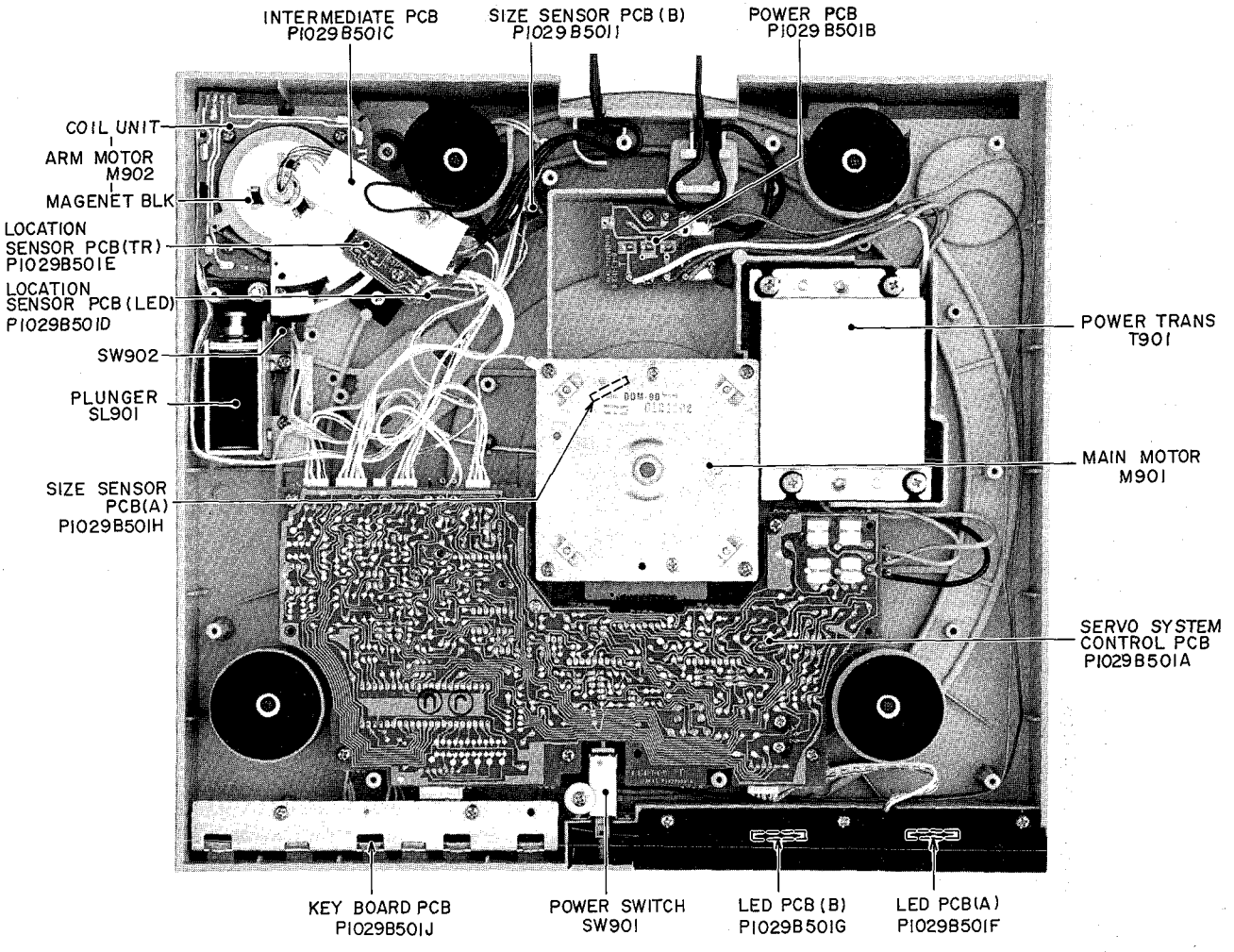


Fig. 4-1

V. VOLTAGE CONVERSION

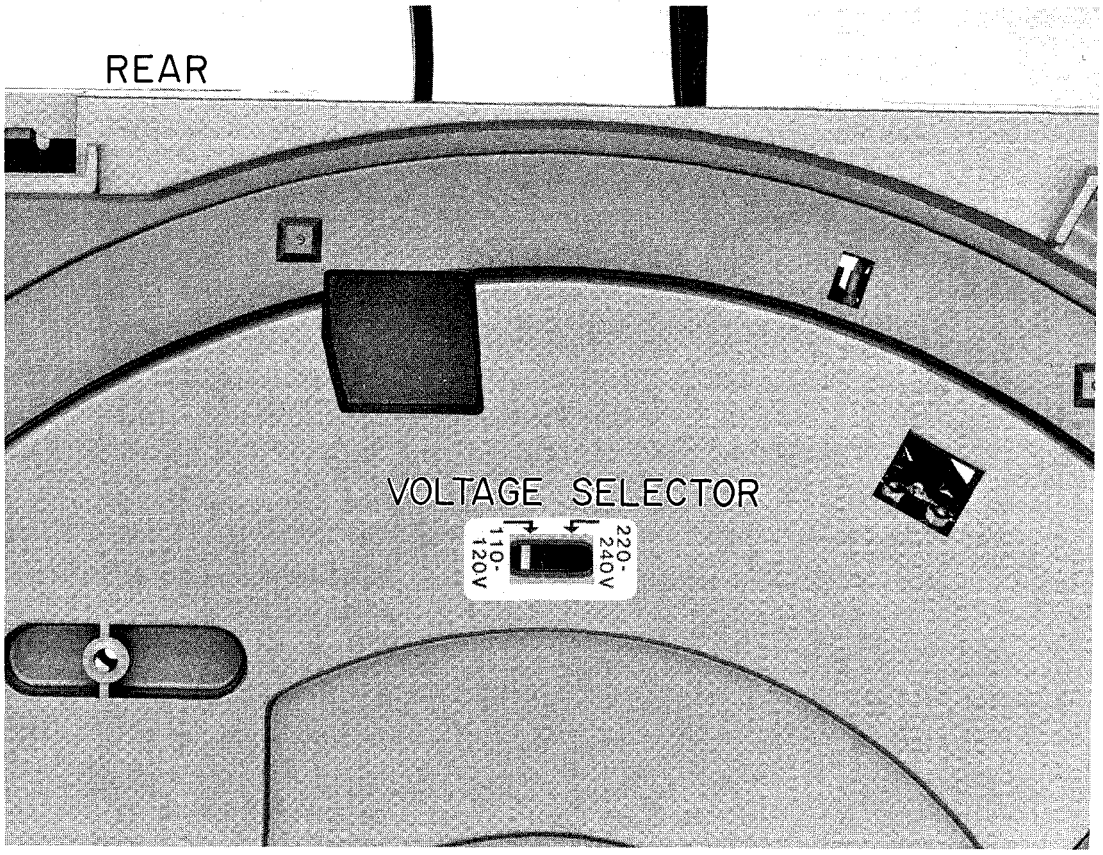


Fig. 5-1 Voltage Conversion

Models for Canada, USA, Europe, UK, Australia and Japan are not equipped with this facility. Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required. If voltage conversion on your machine is possible.

1. Disconnect the power cord.
2. Move the voltage selector located on the cabinet, under the platter, with a screwdriver so that the marker is below the voltage for your area.

VI. CIRCUIT DESCRIPTION

6-1. OUTLINE

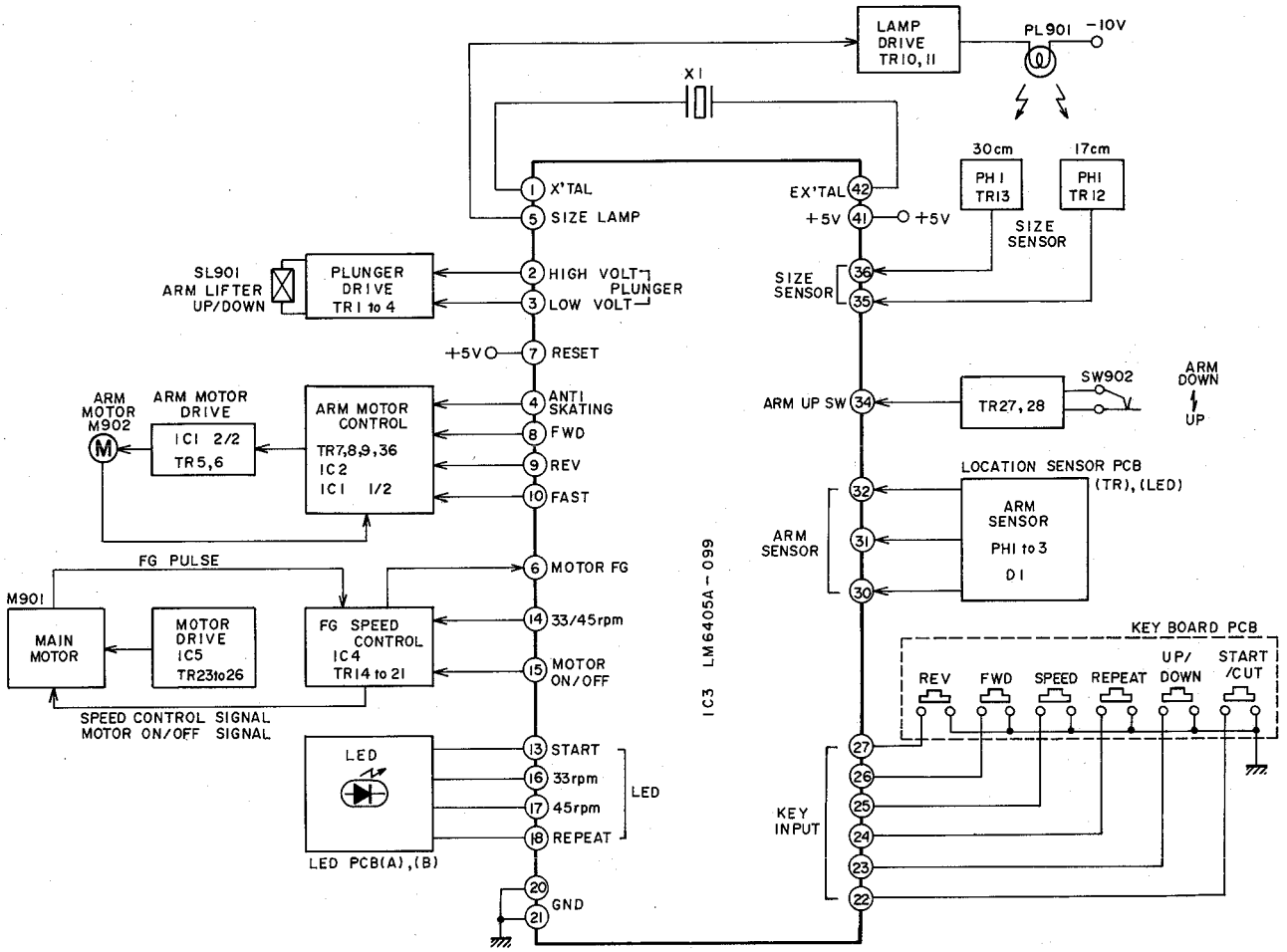


Fig. 6-1 System Block Diagram

AP-M5 is a Direct Drive Full-Auto Turntable using a micro-computer. The use of the micro-computer provides the automatic detection of record size and number of rotations, auto lead-in, auto lead-out, auto repeat, etc.

Fig. 6-1 shows the system block diagram of the AP-M5. MI-COM (IC3), upon receiving an instruction through the key input, detects the record size by two size sensors (lamp: 1, photo sensors: 2) and monitors the arm position by means of 3 location sensors (LED: 1, photo sensors: 3) and at the same time, controls the arm motor, main motor, plunger for arm lifter up/down and LED.

6-2. MEANING OF EACH TERMINAL OF MI-COM (LM6405A-099)

No.	Terminal description	Function
1	X'tal	Connect a X'tal
2	High Volt	Plunger Drive (High Voltage) L: ON
3	Low Volt	Plunger Drive (Low Voltage) L: ON
4	Anti-Skating	For Elect. Anti-Skating L: ON *1
5	Size Lamp	Lamp Drive for Record Size Detect L: ON
6	Motor FG	Interrupt Request Input
7	Reset	
8	FWD	Arm Motor FWD L: ON
9	REV	Arm Motor REV L: ON *1
10	Fast	Arm Motor Fast H: Fast
11	FG Lock	FG Lock Signal
12	Power LED	Unused
13	Start LED	Start/Cut LED Drive L: LED ON
14	33/45 rpm	Main Motor speed change L: 33 1/3 rpm H: 45 rpm
15	Motor ON/OFF	Main Motor ON/OFF L: ON
16	33 1/3 rpm LED	L: LED ON
17	45 rpm LED	L: LED ON
18	Repeat LED	L: LED ON
19	Lock LED	Unused
20	Test	Connect to GND
21	GND	
22	Start/Cut	Start/Cut Key Input SW ON: L
23	Cue	UP/DOWN Key Input SW ON: L
24	Repeat	Repeat Key Input SW ON: L
25	Speed	Speed Key Input SW ON: L
26	FWD	FWD Key Input SW ON: L
27	REV	REV Key Input SW ON: L
28 29	REMO. CON.	Unused
30	Arm Sensor 1	Positive Logic *2
31	Arm Sensor 2	
32	Arm Sensor 3	
33	FG Lock	FG Lock Signal
34	Arm up SW	Arm up : H
35	Size sensor	Record Size Sensor for 17 cm record Positive Logic *2
36	Size sensor	Record Size Sensor for 30cm record Positive Logic *2
37	F. FWD	Unused
38	F. REV	
39	17 cm LED	
40	30 cm LED	
41	+5V	
42	EX'tal	Connect a X'tal

*1 This MI-COM has the program for Electrical Anti-skating which is not used for this model (AP-M5). Accordingly, there is an arrangement made in the outer circuit, and it is as follows. Terminals ⑨ & ④ are at "L" level during which the stylus is on the record, and the signal of the former moves the tone arm toward the beginning of the record for anti-skating.
This operation is not necessary since this model is equipped with mechanical anti-skating. Consequently, the inverted signal of terminal ④ mentioned above is used to cut this operation.

*2 Positive logic: Whe the light is sensed by the sensor, the level becomes "H" level.

6-3. POWER SUPPLY CIRCUIT

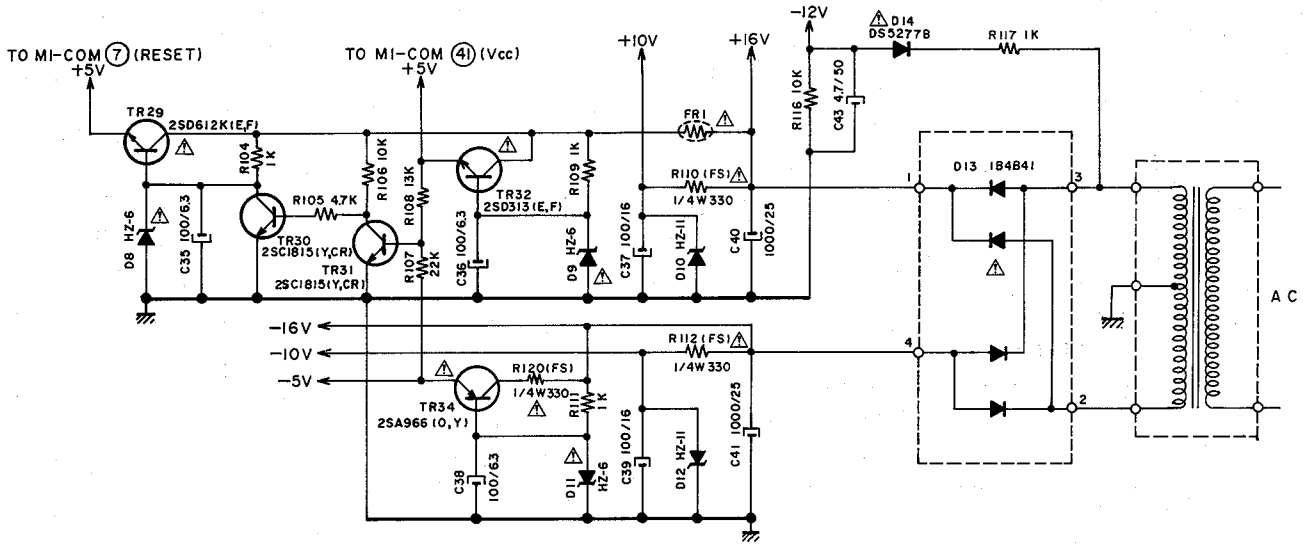


Fig. 6-2 Power Supply Circuit

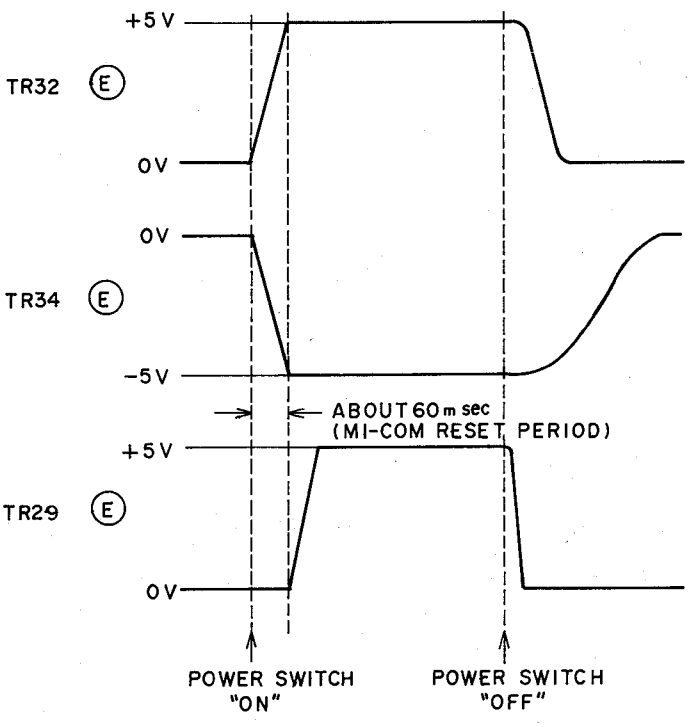


Fig. 6-3 Power Supply Timing

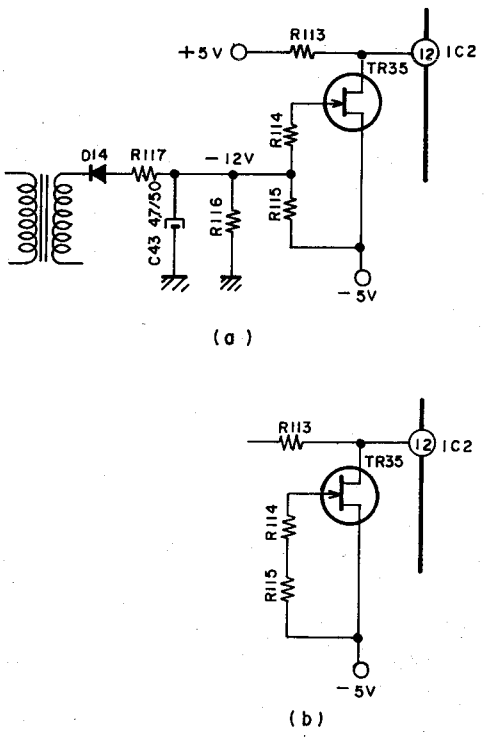


Fig. 6-4 The Operation of TR35

6-3-1. OPERATION WHEN POWER IS TURNED ON (INITIALIZING) (Refer to Fig. 6-2 and Fig. 6-3)

When the power switch is turned ON, +16V appears at both ends of C40 and −16V at both ends of C41, and TR30 is turned ON. Also +10V and −10V appear at boh ends of C37 and C39 respectively. Slightly later, TR32 and TR34 will be turned ON and +5V and −5V will appear respectively. TR31 is turned ON by +5V from TR32, which results in TR30 OFF, TR29 ON and appearance of +5V. That is, by means of the TR30 and TR31, +5V supplied by TR29 appears about 60msec later than the +5V supplied by TR32. (Fig. 6-3).

Since the +5V from TR32 is used to supply power for the MI-COM and the +5V from TR29 is connected to the reset terminal, the reset terminal becomes "L" for about 60msec after power is turned ON and the MI-COM is reset.

As explained above, a power circuit is used to initialize the MI-COM.

6-3-2. OPERATION WHEN POWER IS TURNED OFF (Refer to Figs. 6-2, 6-3, 6-4 and 6-5)

1) When the power switch is turned off, more current is flowing on the positive (+) side than on the negative (−) side and, therefore, each voltage on the positive side (+) becomes "0"V more quickly than the voltage on the negative (−) side.
2) Since the voltage drop of the BASE of TR31 is fast, TR31 is turned off and, TR30 is turned on and the BASE voltage of TR29 is reduced to "0"V. Therefore, +5V from TR29 is instantaneously dropped to "0"V when the power supply is turned off.
3) When power is supplied, TR35 connected to IC2 ⑫ is off (Refer to Fig. 6-4-a).
   When the power is turned off. TR35 is immediately turned on, because the capacitance of C43 is very small (Refer to Fig. 6-4-b).
   Consequently, −5V is supplied to IC2 ⑫ and IC2 SW D is not turned on. (Fig. 6-5)
   These arrangements prevent the MI-COM from functioning erroneously when the power is turned on and off and the stylus is prevented from scratching the record when the power supply stops.

6-4. INITIALIZE

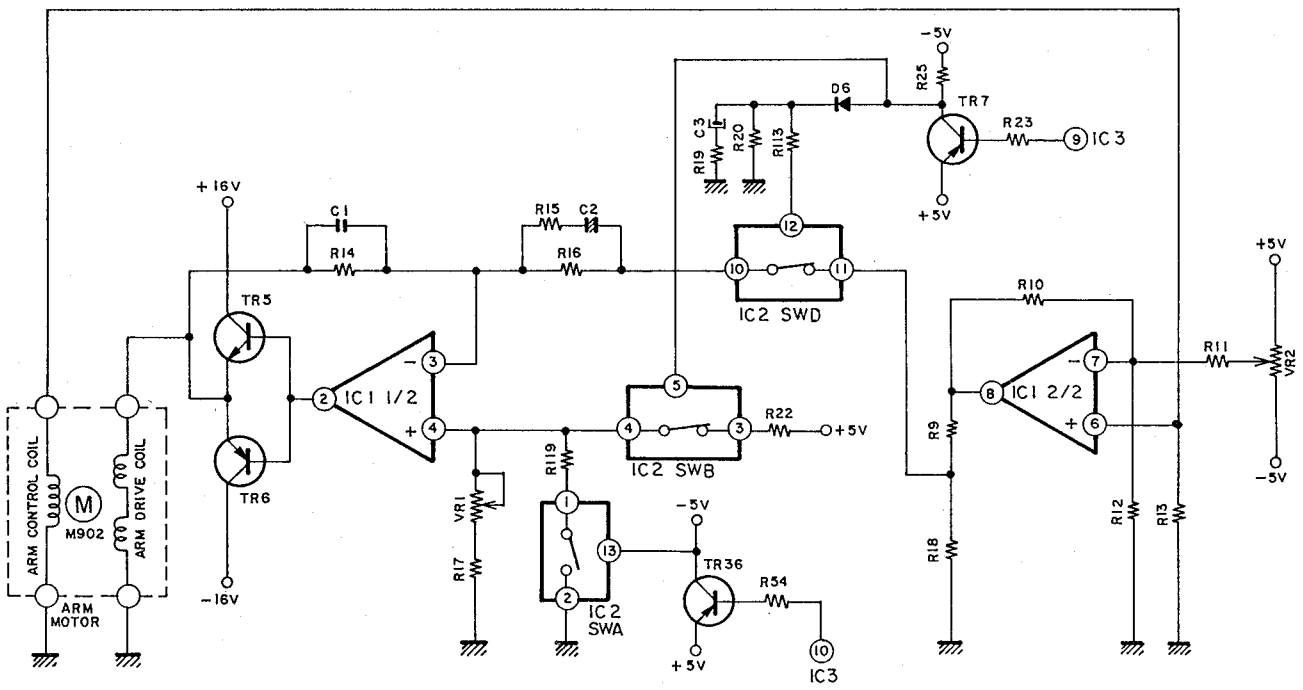


Fig. 6-5 Arm Drive Circuit (F. REV/REV)

1) When the power switch is depressed while the tone arm is away from the tone arm clamp position, IC3 ⑨ (REV) becomes "L" and IC3 ⑩ (FAST) becomes "H", which will return the tone arm to the "tone arm clamp position".
When IC3 ⑨ (REV) becomes "L", TR7 is turned on and, then, SW B and SW D of IC2 are turned on (Refer to Fig. 6-5).
2) Since the output from IC1 causes current to flow through TR5 and the Arm Drive Coil, the tone arm quickly moves toward the arm rest (FAST REVERSE), but since the voltage indicated in the arm control coil is applied to IC1 2/2 as non-reverse force input and the output from IC1 2/2 functions as reverse turn input of IC1 1/2 the speed of the tone arm is controlled. The speed of the tone arm is adjusted by VR1. VR2 is used for adjusting the off-set voltage of IC1 2/2.
3) When the tone arm is set on the arm rest (Arm position 1), the "initialize" of MI-COM is completed (Note) while at the same time, IC3 10 becomes "L" and TR36 ON → IC2 SW A ON and R119 is connected in parallel with R17 and VR1. Consequently, the tone arm is suddenly slowed down (Reverse).
4) MI-COM is designed so that it accepts the key input when "initialize" is completed.

NOTE: For the relationships between the arm position and arm motor, refer to Fig. 6-7.

6-5. AUTO PLAY

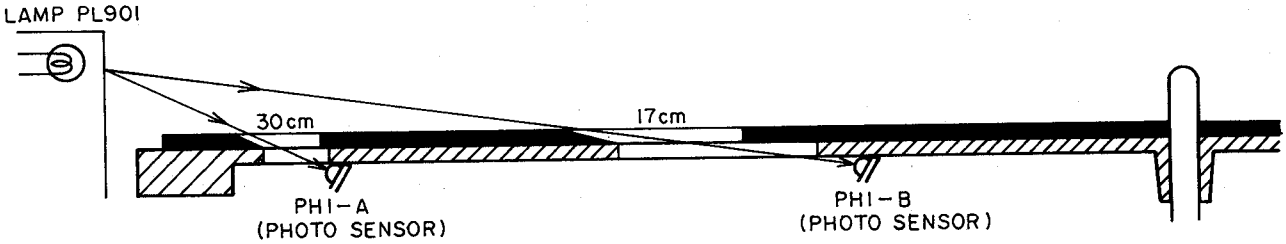


Fig. 6-6 Size Detection

6-5-1. RECORD SIZE DETECTION AND SPEED DETERMINATION

If no speed is specified, IC3 ⑭ will be "L" and the speed will be set to 33 1/3 rpm after power is turned ON.
When the START key is pressed, IC3 ㉒ becomes "L" and the MI-COM (IC3) recognizes that the START key has been pressed. Then, IC3 ⑮ (MOTOR ON/OFF) becomes "L", TR20 is turned OFF, and the motor starts. At the same time, IC3 ⑬ repeats "L" and "H" alternately every 0.15sec to make D2 flicker, (START/CUT LED).
When the motor reaches the specified speed, IC3 ⑪ and ㉝ become "L" and the speed is locked. (The frequency from the motor FG is read by the MI-COM.) The size detecting lamp (PL901) lights only for 2 seconds after IC3 ㉝ becomes "L", and the size sensors (PH1x2) detect the existence and size of the record, if any, on the platter.
If the outer periphery sensor is PH1-A and the inner periphery sensor is PH1-B:

1) Without record
PH1-A ON/OFF → C9 → TR13 ON/OFF
→ IC3 ㊱ ⎍⎍⎍⎍$_{0V}$="L"
PH1-B ON/OFF → C10 → TR12 ON/OFF
→ IC3 ㉟ ⎍⎍⎍⎍$_{0V}$="L"
When both IC3 ㉟ and ㊱ are "L" (⎍⎍⎍⎍), the initialize status is recovered.
2) When a 17cm record is in position
PH1-A ON/OFF → C9 → TR13 ON/OFF
→ IC3 ㊱ ⎍⎍⎍⎍$_{0V}$="L"
PH1-B OFF → TR12 OFF → IC3 ㉟ ——$_{5V}$ - - -$_{0V}$="H"
When IC3 ㉟ is "H" and ㊱ is "L", it is judged that there is a 17cm record, and IC3 ⑭ → "H", ⑯ → "H" and ⑰ → "L", so that the speed is set to 45rpm and at the same time the 45rom LED is lit.
3) When a 30cm record is in position
PH1-A OFF → TR13 OFF → IC3 ㊱ ——$_{5V}$ - - -$_{0V}$="H"
PH1-B OFF → TR12 OFF → IC3 ㉟ ——$_{5V}$ - - -$_{0V}$="H"
When both IC3 ㉟ and ㊱ are "H", it is judged that there is a 30cm record, and IC3 ⑭ and ⑮ are "L", the speed is 33 1/3rpm and the 33 1/3 rpm LED remains lit.
After the record size is detected, the START/CUT LED changes from "flickering" to "steady lighting".

6-5-2. AUTO LEAD-IN

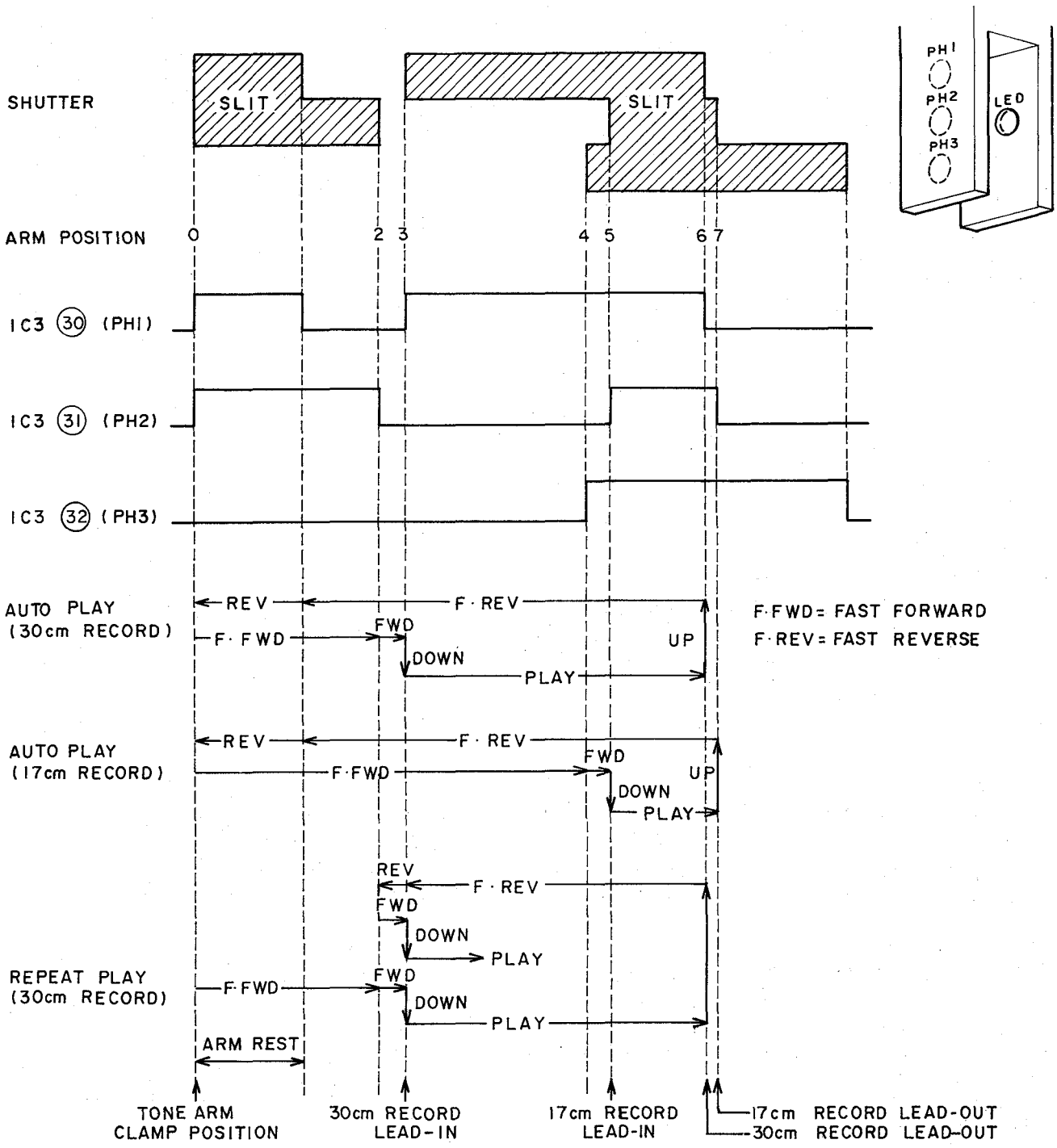


Fig. 6-7 Arm Position Sensor

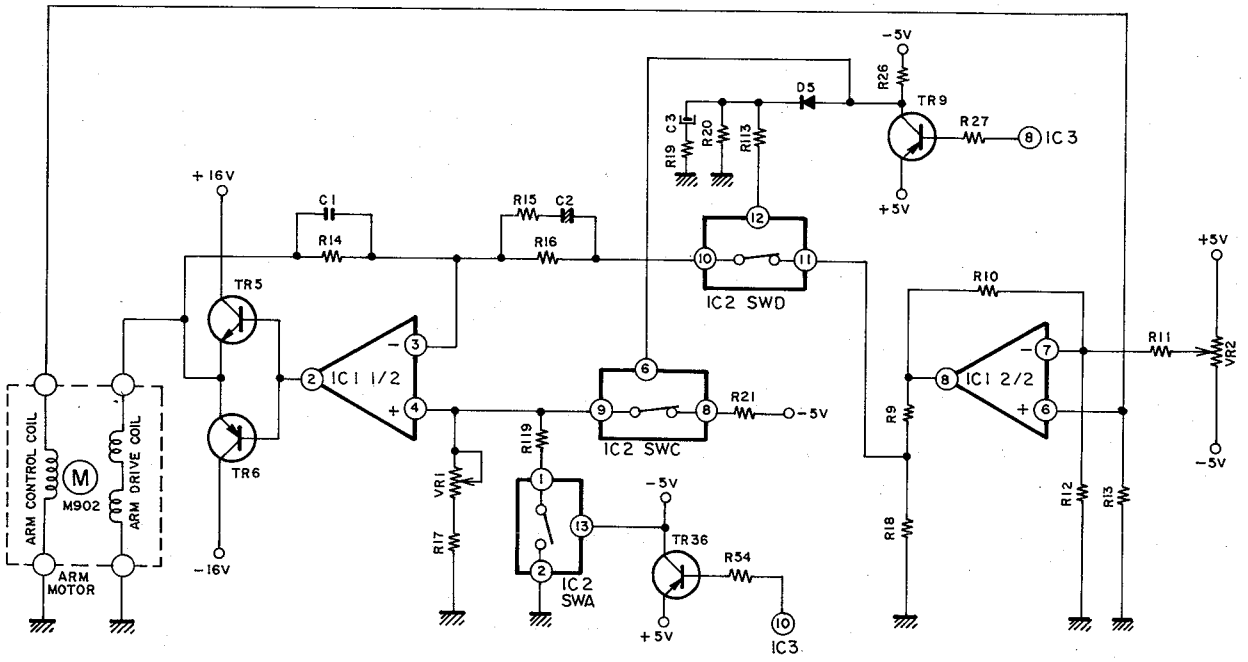


Fig. 6-8 Arm Drive Circuit (F. FWD/FWD)

When the record size detection is completed and it is judged that there is a record, the tone arm starts to move.

The tone arm position is detected by 3 photosensors which detect the slits in the shutter which is interlocked with the tone arm. Fig. 6-7 shows the relationship between the shutter, photo sensor output and arm position.

When it is judged that there is a 30cm record, IC3 ⑧ becomes "L" and ⑩ becomes "H". When IC3 ⑧ becomes "L", TR9 is turned ON and SW C and SW D of IC2 are turned ON, thus making the circuit as shown in Fig. 6-8.

Unlike the F. REV/REV condition, a negative (−) voltage is imposed on ④ of IC1 1/2 and the output ② is also negative (−), and TR6 is turned ON and current flows through the arm drive coil, giving a fast forward drive to the tone arm.

When the tone arm reaches position 2 (Fig. 6-7), IC3 ⑩ becomes "L" and TR36 → ON, IC2 SW A → ON, and therefore, the arm speed becomes slow. When the tone arm reaches the position 3, IC3 ⑧ → "H", ⑨ → "H" and ⑩ → "L" and the tone arm is stopped. At the same time, IC3 ② "L" → TR3 "ON" → TR1 "ON" or IC3 ③ "L" → TR4 "ON" → TR2 "ON", and the plunger SL901 is turned ON (ON at about 30V across its terminals) and the tone arm starts to descend. At this time, if TR3 is turned ON, IC2 SW D is turned ON to impose speed control on the tone arm to control the horizontal movement.

2 seconds after IC3 ② and ③ become "L", IC3 ② becomes "H", leading to TR3 OFF → TR1 OFF and the plunger is held at about 15V across its terminals. At the same time, IC2 SW D is turned OFF, the speed control is released and playing starts.

When the plunger is turned ON, the interlocked leaf switch (SW902) is turned OFF and IC3 ㉞ becomes "L". Then the MI-COM (IC3) recognizes that the tone arm is lowered.

When IC3 ㉞ becomes "L", the sequence becomes IC3 ④ "L", ⑩ "L", then TR8 ON and TR7 OFF. The reason why IC3 ④ and ⑨ become "L" is that this MI-COM (IC3) is so programmed that it can be used also for electronic anti-skating, and this signal is not required for the AP-M5 which uses mechanical anti-skating. Therefore, the REV signal of ⑨ is cancelled by TR8.

6-5-3. AUTO LEAD-OUT

When the tone arm reaches Position 6, the sequence becomes IC3 ③ "H" → TR4 OFF → TR2 OFF → plunger (SL901) OFF, and the tone arm rises. The leaf switch (SW902) interlocked with the plunger is turned ON, so the sequence becomes TR28 OFF → TR27 ON → IC3 (34) "H" and the MI-COM (IC3) recognizes that the tone arm is raised.

Instantaneously, another sequence starts: IC3 ④ "H", ⑧ "H", ⑨ "H", ⑩ "L", and then IC3 ⑨ "L", ⑩ "H" and fast reverse drive of the tone arm starts. When the tone arm reaches Position 2, IC3 ⑮ "H" → TR20 ON, and the main motor drive is stopped. At the same time, IC3 ⑬ becomes "H" and the START/CUT LED is turned OFF. When the tone arm reaches Position 1, IC3 ⑩ "L" → TR36 ON → IC2 SW A ON, and the tone arm speed becomes slow. When the tone arm reaches Position 1, the platter rotation continues for 2 seconds, then IC3 ⑨ becomes "H" to turn TR7 OFF and stop the tone arm. At this time, the tone arm has reached the clamp position.

VII. ORDINARY ADJUSTMENT

7-1. STYLUS PRESSURE ADJUSTMENT (Refer to Fig. 7-1, 2)

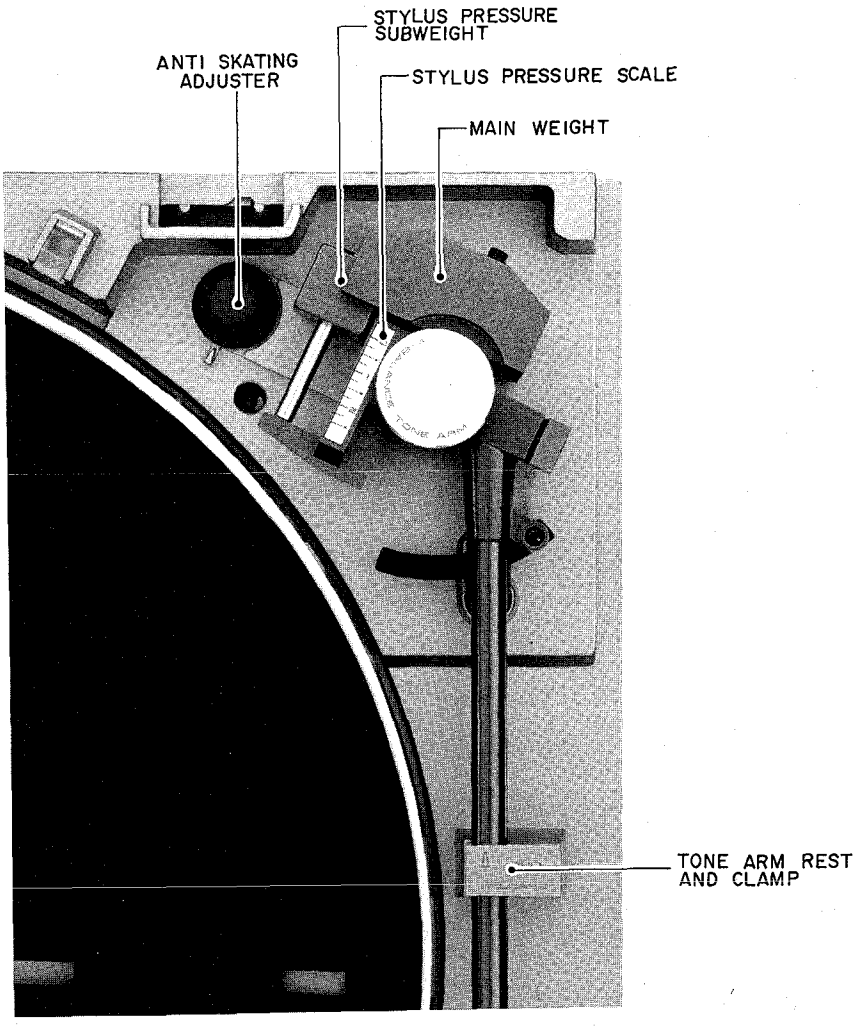


Fig. 7-1 Stylus Pressure Adjustment

Fig. 7-2 Stylus Pressure Adjustment

1) Connect power cord and turn ON the POWER switch.
2) Set the Anti-skating Adjuster to OFF.
3) Set the stylus pressure subweight to "0".
4) Unlock the Tone Arm and bring it towards the Platter.
   *Remove the stylus Guard being careful not to damage the Stylus.
5) With the Tone Arm held midway between the Tone Arm Rest and the rim of the Platter, depress the up/down (▼/▼) button, to lower the Tone Arm Lifter.
6) Adjust the Main Weight unitl the Tone Arm is in perfect horizontal balance.
7) Return the Tone Arm to the Tone Arm Rest.
8) Set the stylus pressure subweight to 1.8.
   (1.8g is the stylus pressure for the attached cartridge SMB-5)
9) Set the anti-skating adjuster to 1.8.

7-2. OVERHANG ADJUSTMENT (Refer to Fig. 7-3)

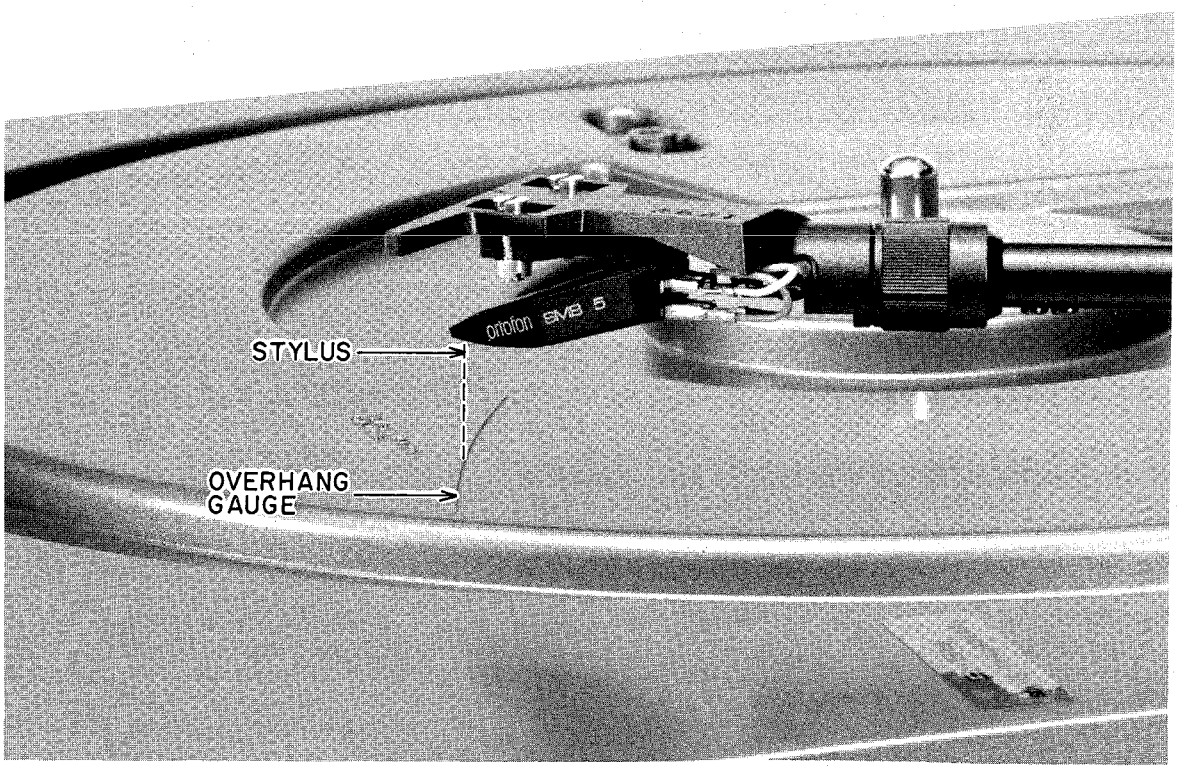


Fig. 7-3. Overhang Adjustment

The distance between the spindle and the stylus when the tone arm is centered over the platter is known as overhang.
1) Remove the rubber mat and the platter.
2) Adjust the cartridge so that the stylus is over the mark on the cabinet.

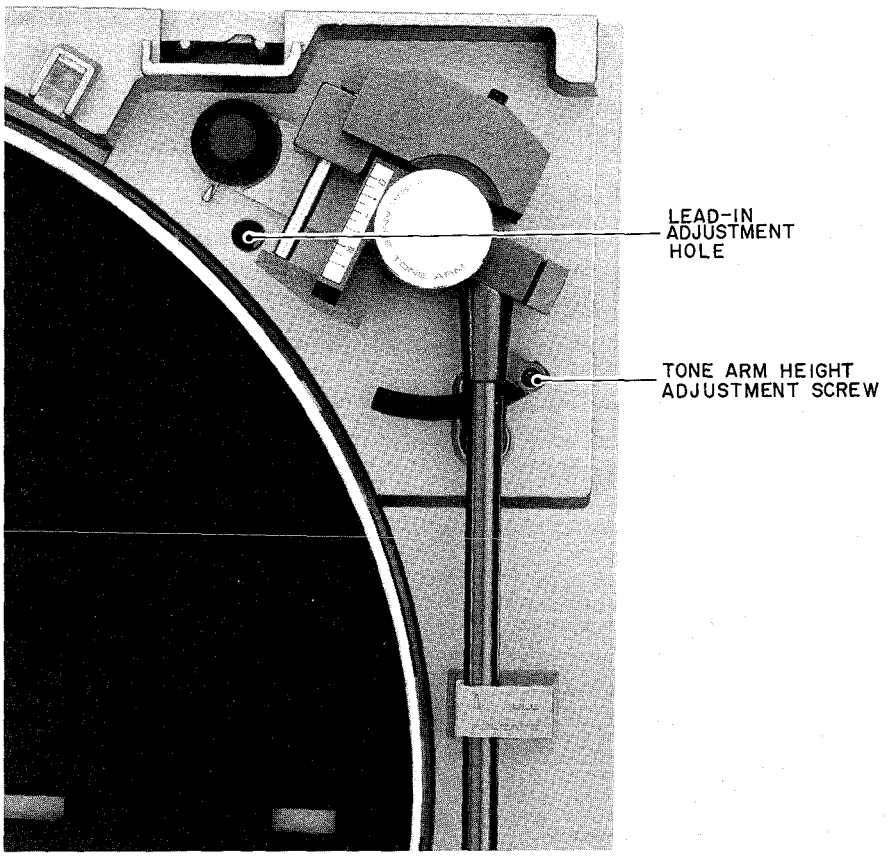


Fig. 7-4 Tone Arm Height Adjustment, Lead-IN Adjustment

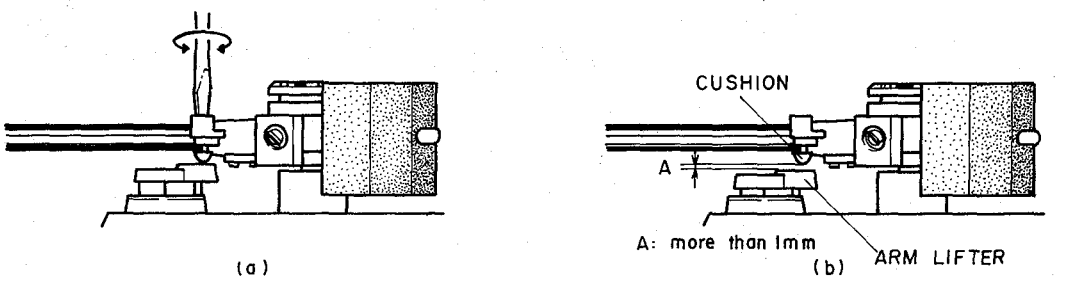


Fig. 7-5 Tone Arm Height Adjustment

7-3. TONE ARM HEIGHT ADJUSTMENT (Refer to Fig. 7-4, 5)

1) With tone arm in the up-position, the stylus should be 4 to 7mm above the surface of the record. Turn the adjustment screw to change the height.
   Clockwise: up
   Counterclockwise: down
2) With the tone arm in the down-position, i.e. the stylus on the surface of the record (the same as the normal playing position), confirm that the distance between the arm-lifter and height adjustment screw cushion is more than 1mm. (Fig. 7-5-b)

7-4. LEAD-IN POSITION ADJUSTMENT (Refer to Fig. 7-4)

1) Place a record on the Platter. (Use a 30cm record)
2) Auto-play the record and confirm where the Stylus descends.
3) Depress the START/CUT (S/C) button to return the Tone Arm to the Tone Arm Rest.
4) Turn the Lead-in Adjustment Screw with a screw driver:
   Clockwise: To make the Stylus descend away from the Spindle.
   Counterclockwise: To make the Stylus descend towards the Spindle.

NOTE: Do not turn the screw too far.
Carry out the adjustment a little at a time and confirm the position after each adjustment.

VIII. ELECTRICAL ADJUSTMENT

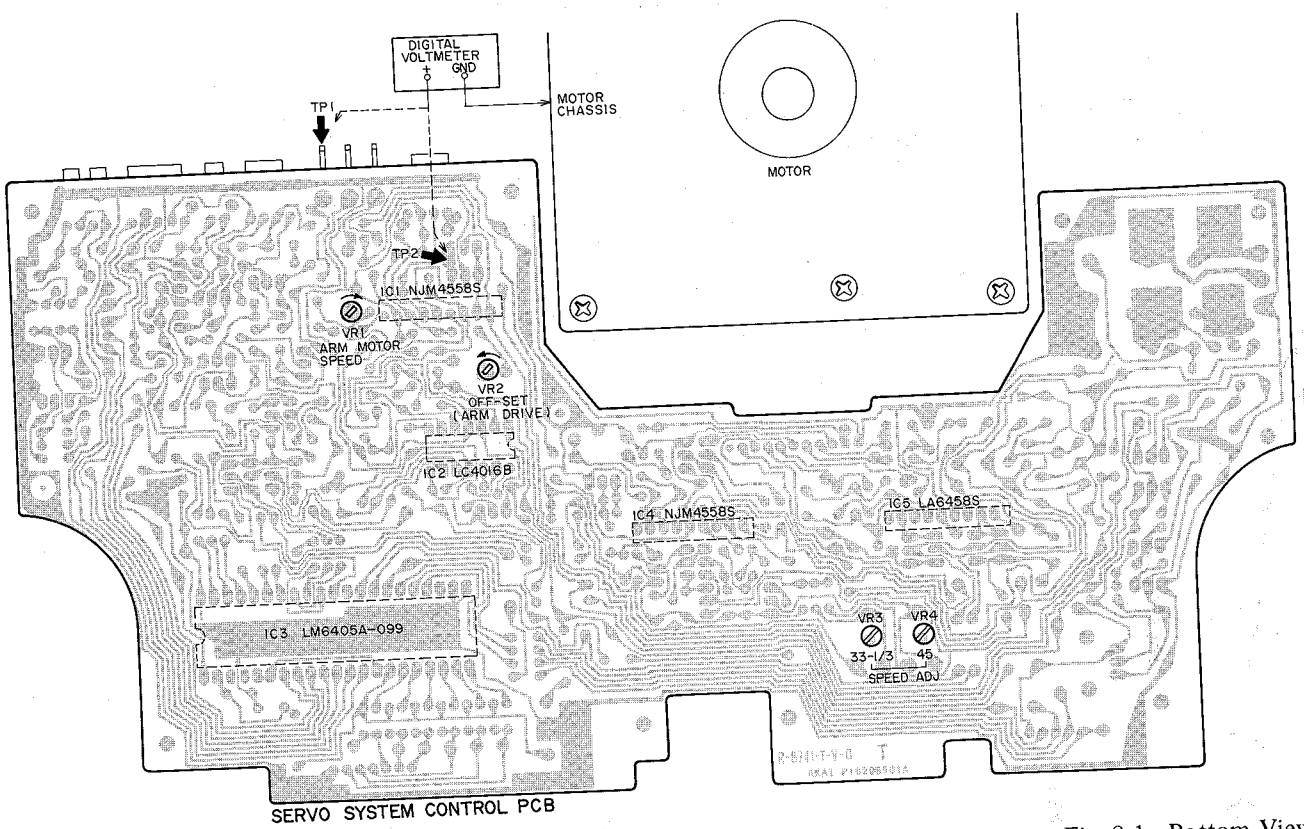


Fig. 8-1 Bottom View

8-1. SPEED ADJUSTMENT (Refer to Fig. 8-1)

1) Set the Speed Selector to 33-1/3rpm.
2) Playback the Test Record (33-1/3rpm, 1,000Hz).
3) Adjust VR3 (3KB) so that the speed is 1,000±5Hz.
4) Set the Speed Selector to 45rpm.
5) Playback the Test Record (45rpm, 1,000Hz).
6) Adjust VR4 (20KB) so that the speed is 1,000± 5Hz.

8-2. OFF-SET VOLTAGE ADJUSTMENT (ARM MOTOR DRIVE) (Refer to Fig. 8-1)

1) Connect a digital voltmeter to TP1.
2) Turn on the Power Switch.
3) Adjust VR2 until digital voltmeter reads 0V.

8-3. ARM MOTOR SPEED ADJUSTMENT (Refer to Fig. 8-1)

1) Connect a digital voltmeter to TP-2.
2) Lock the Tone Arm to Tone Arm Rest.
3) Turn on the Power Switch.
4) Depress the REV (>) Button, and adjust VR1 until digital voltmeter reads +6V.

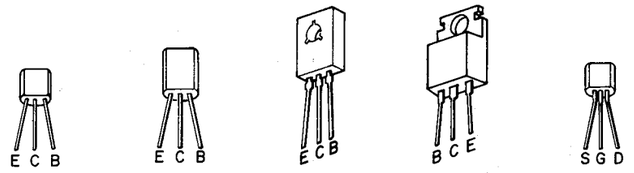
IX. CLASSIFICATION OF VARIOUS P.C BOARDS

9-1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

P.C Board Title	P.C Board Number
Servo System Control P.C Board	P1029B501A
Power Supply P.C Board	P1029B501B
Intermediate P.C Board	P1029B501C
Location Sensor P.C Board (LED)	P1029B501D
Location Sensor P.C Board (TR)	P1029B501E
LED P.C Board (A)	P1029B501F
LED P.C Board (B)	P1029B501G
Size Sensor P.C Board (A)	P1029B501H
Size Sensor P.C Board (B)	P1029B501I
Key Board P.C Board	P1029B501J

9-2. COMPOSITION OF VARIOUS P.C BOARDS

1) SERVO SYSTEM CONTROL PCB P1029B501A



2SA1015
2SC1815

2SA966
2SC2236

2SD612K

2SD313

2SK30A

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

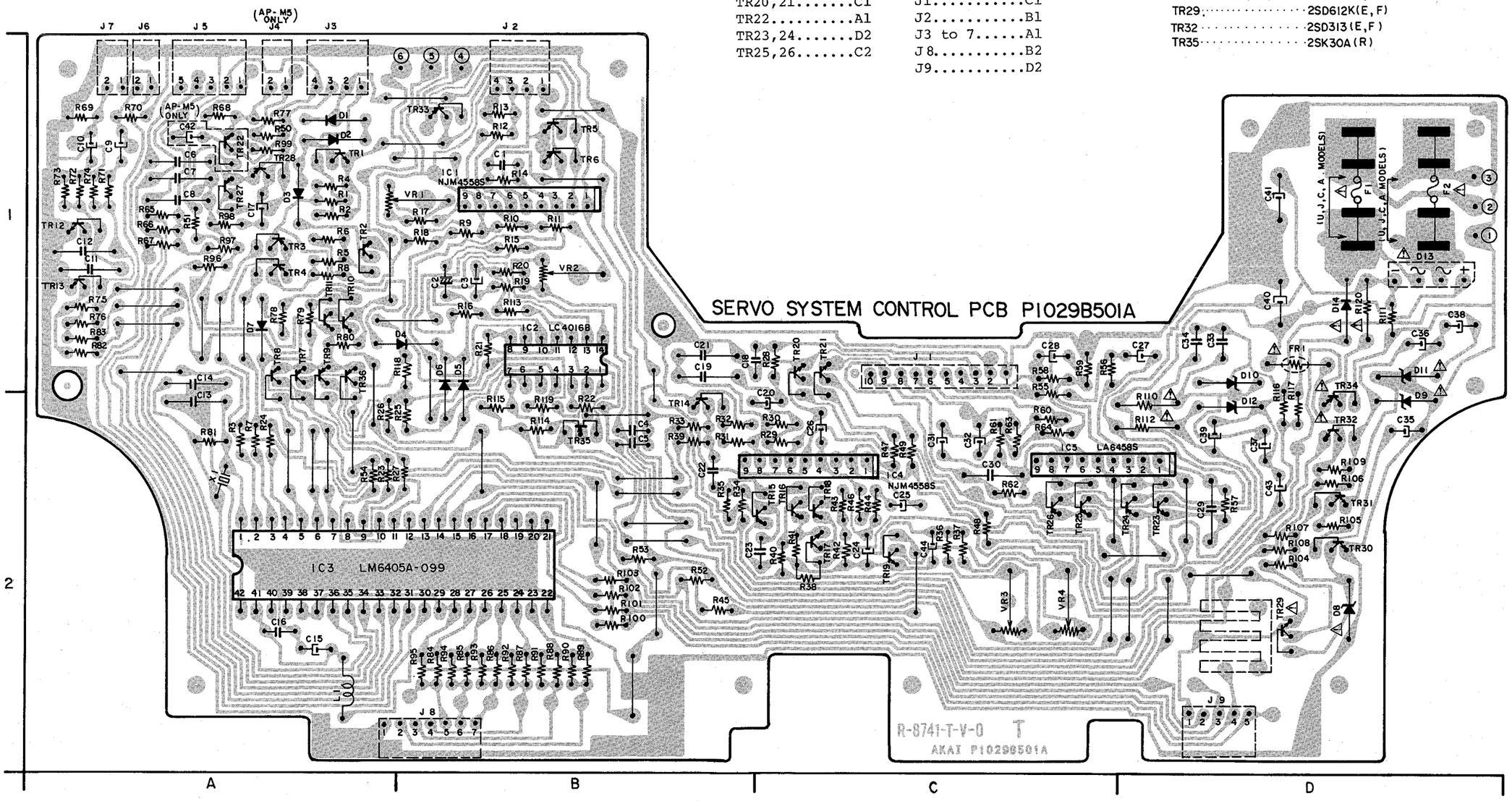
LOCATION OF COMPONENTS

IC
IC1,2.....B1
IC3.....A,B2
IC4,5.....C2

TR
TR1 to 4.....A1
TR5,6.....B1
TR7 to 13.....A1
TR14.....B2
TR15 to 19....C2
TR20,21.....C1
TR22.....A1
TR23,24.....D2
TR25,26.....C2
TR27,28.....A1
TR29 to 32...D2
TR33.....B1
TR34.....D2
TR35.....B2
TR36.....A1

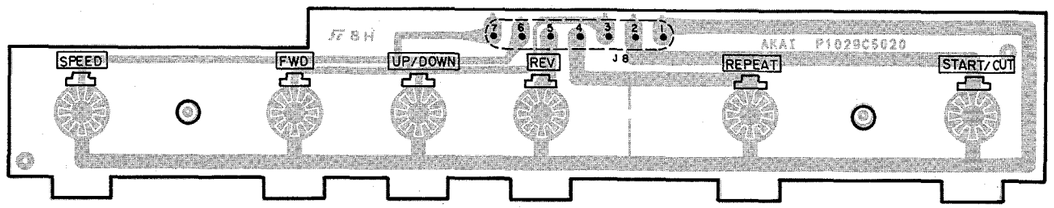
TERMINAL
① to ③.....D1
④ to ⑥.....B1
J1.....C1
J2.....B1
J3 to 7.....A1
J8.....B2
J9.....D2

TR1,2,5,23,25.....2SC2236(O,Y)
TR3,4,7 to 11, 18,27,28,33,36.....2SA1015(O,Y)
TR6,24,26,34.....2SA966(O,Y)
TR12 to 17,19, 20 to 22,30,31.....2SC1815(Y,GR)
TR29.....2SD612K(E,F)
TR32.....2SD313(E,F)
TR35.....2SK30A(R)



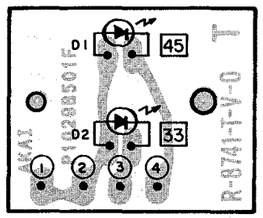
SERVO SYSTEM CONTROL PCB P1029B501A

2) KEY BOARD PCB P1029B501J

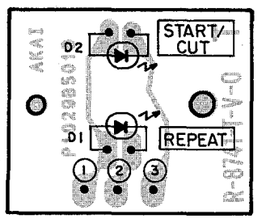


KEY BOARD PCB P1029B501J

3) LED PCB (A) P1029B501F and LED PCB (B) P1029B501G

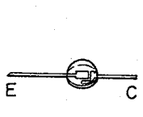


LED PCB(A)
P1029B501F



LED PCB(B)
P1029B501G

4) SIZE SENSOR PCB (A) P1029B501H and SIZE SENSOR PCB (B) P1029B501I

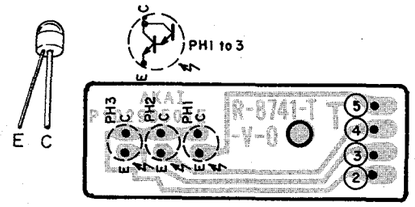


SIZE SENSOR PCB(A)
P1029B501H

SIZE SENSOR PCB(B)
P1029B501I

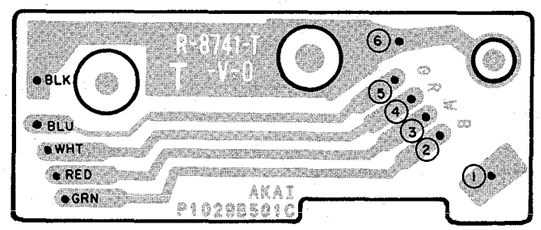
5) LOCATION SENSOR PCB (LED) P1029B501D and LOCATION SENSOR PCB (TR) P1029B501E

LOCATION SENSOR
PCB(LED) P1029B501D



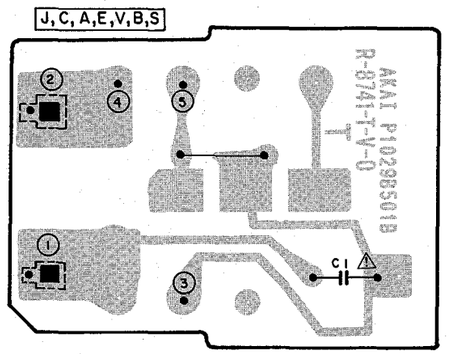
LOCATION SENSOR
PCB(TR) P1029B501E

6) INTERMEDIATE PCB P1029B501C

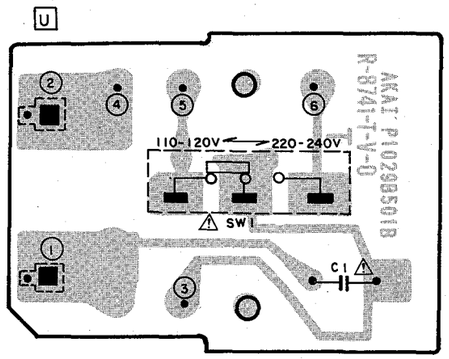


INTERMEDIATE PCB P1029B501C

7) POWER SUPPLY PCB P1029B501B



POWER SUPPLY PCB P1029B501B



POWER SUPPLY PCB P1029B501B

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

SECTION 2

PARTS LIST

TABLE OF CONTENTS

RECOMMENDED SPARE PARTS 27
1. SERVO SYSCON P.C BOARD BLOCK 27
2. FINAL ASSEMBLY BLOCK 28
INDEX 30

Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

b) P.C Board Block

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

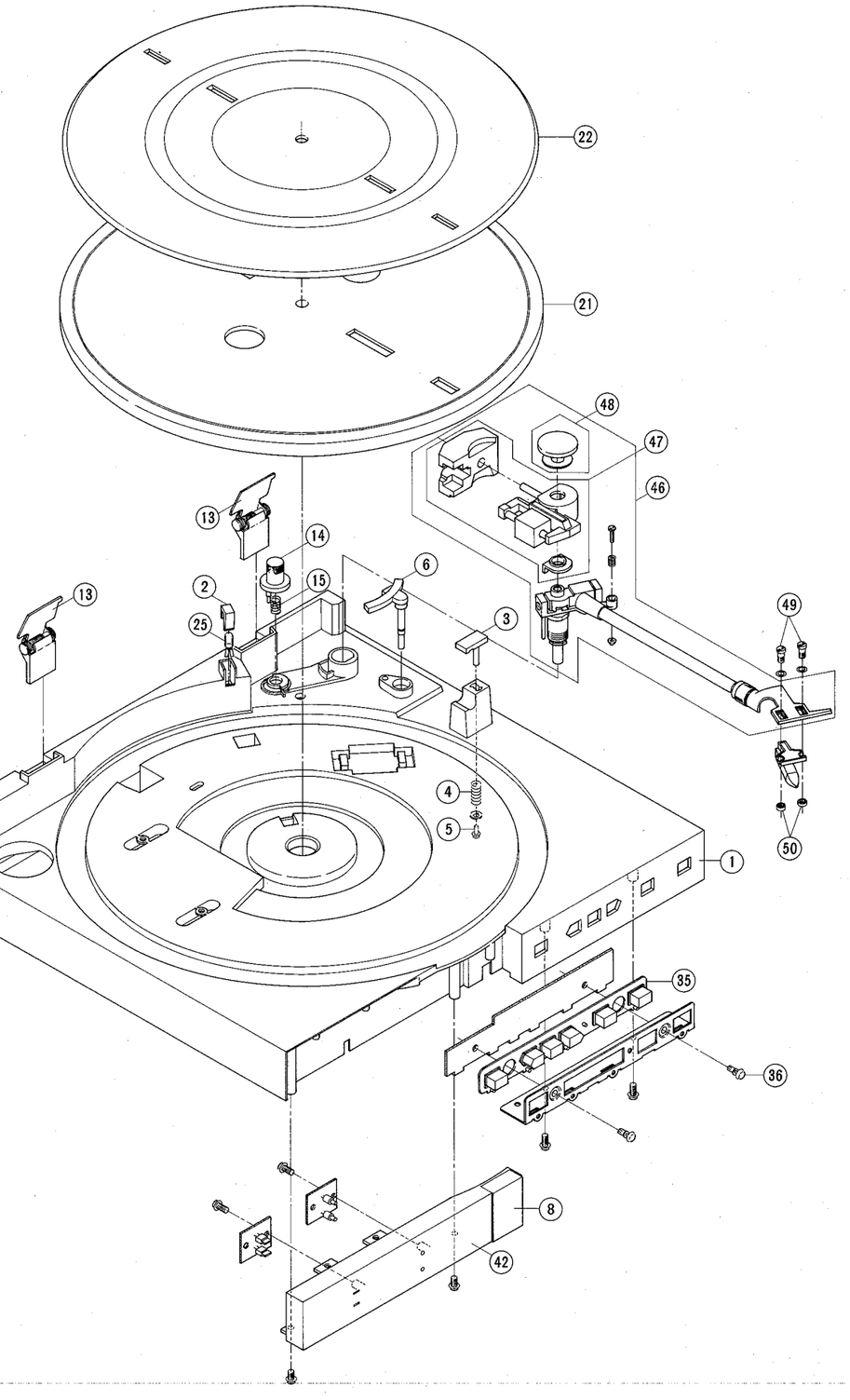
NO.	PARTS NO.	DESCRIPTION
1	BM-P1029A100A	MAIN MOTOR BLK AP-M5
2	BT-337905	⚠ TRANS POWER APT-5-10(J)
3	BT-347082	⚠ TRANS POWER APT-5-20(A)
4	BT-337906	⚠ TRANS POWER APT-5-30(C)
5	BT-337907	⚠ TRANS POWER APT-5-40(E,V)
6	BT-337908	⚠ TRANS POWER APT-5-50(B,S)
7	BT-337904	⚠ TRANS POWER APT-5-70(U)
8	ED-306724	⚠ D SILICON S5277B 100/1.0A
9	ED-322238	⚠ D SILICON 1B4B41 100/1.0A
10	ED-330989	⚠ D ZENER H HZ11 B2
11	ED-306010	⚠ D ZENER H HZ6 A2
12	ED-310340	D LED GL-350 INFRARED RAY
13	ED-337893	D LED SLP-144D01 RED
14	ED-322247	D LED SLP-151D RED
15	ED-337894	D LED SLP-444D01 AMBER
16	ED-337892	D LED SLP-451D AMBER
17	EF-300602	⚠ FUSE FST3100 T 250V 0.63A (E,V,B,S)
18	EI-338390	IC LA6458S-AKAI
19	EI-337903	IC LC4016B
20	EI-337890	IC LM6405A-099
21	EI-201940	IC NJM4558S
22	EL-337901	PL CORD 16.0V 80MA 300/300
23	EO-345922	COIL FIX 1 LAL03KH 47.00H K
24	EP-337896	SOLENOID TDS-09SL-513 22V
25	ER-328067	⚠ R CB H SNP FS RDS 1/4W 331J
26	ER-200595	⚠ R FUSE ERD2FC F10 1/4W 5R6J
27	ES-337902	⚠ SW PUSH SDLD1P 01-1
28	ES-337895	SW LEAF MSW-0094NBK 01-1 NO
29	ET-336816	TR FET 2SK30A R
30	ET-336941	⚠ TR 2SD313 E,F
31	ET-310148	⚠ TR 2SD612K E,F
32	ET-310341	TR PHOTO PT350 T
33	ET-337891	TR PHOTO PH101
34	ET-325501	TR 2SA1015 O,Y
35	ET-306720	TR 2SA966 O,Y
36	ET-307234	TR 2SC1815 Y,GR
37	ET-306719	TR 2SC2236 O,Y
38	EV-336853	R S-FIX H KVSF807U 3P 103
39	EV-341225	R S-FIX H KVSF807U 3P 503
40	EV-337924	R S-FIX H TM8KW3-3S 3P 0.30W 302
41	EV-337925	R S-FIX TM8KV3-3S 3P 0.30W 203
42	EZ-348409	OSC CE CSB400P 0.4 MHZ
43	TP-P1029A050A	MAGNET BLK AP-M5
44	TP-337915	TONE ARM W/SHELL ARM-5

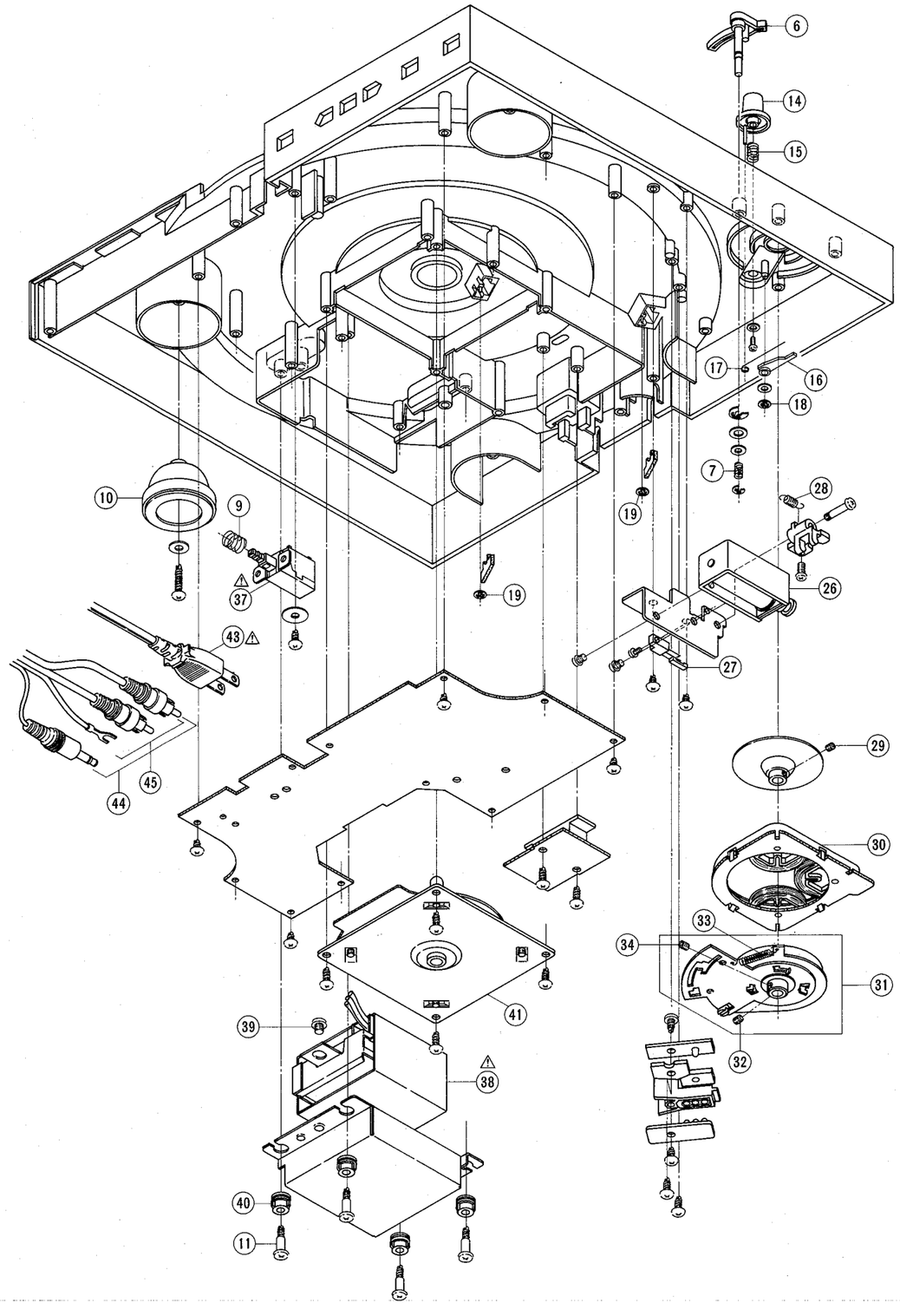
1. SERVO SYSCON P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
1-1	BA-P1029A110A	PC SERVO SYSCON BLK AP-M5(U)
1-2	BA-P1029A110B	PC SERVO SYSCON BLK AP-M5(J)
1-3	BA-P1029A110C	PC SERVO SYSCON BLK AP-M5(A)
1-4	BA-P1029A110D	PC SERVO SYSCON BLK AP-M5(E) (E,V)
1-5	BA-P1029A110E	PC SERVO SYSCON BLK AP-M5(C)
1-6	BA-P1029A110F	PC SERVO SYSCON BLK AP-M5(B)
1-7	BA-P1029A110G	PC SERVO SYSCON BLK AP-M5(S)
	SERVO SYSCON P.C BOARD	
1-IC1	EI-201940	IC NJM4558S
1-IC2	EI-337903	IC LC4016B
1-IC3	EI-337890	IC LM6405A-099
1-IC4	EI-201940	IC NJM4558S
1-IC5	EI-338390	IC LA6458S-AKAI
1-TR1,2	ET-306719	TR 2SC2236 O,Y
1-TR3,4	ET-325501	TR 2SA1015 O,Y
1-TR5	ET-306719	TR 2SC2236 O,Y
1-TR6	ET-306720	TR 2SA966 O,Y
1-TR7to11	ET-325501	TR 2SA1015 O,Y
1-TR12to17	ET-307234	TR 2SC1815 Y,GR
1-TR18	ET-325501	TR 2SA1015 O,Y
1-TR19to21	ET-307234	TR 2SC1815 Y,GR
1-TR22	ET-307234	TR 2SC1815 Y,GR (AP-M5 ONLY)
1-TR23	ET-306719	TR 2SC2236 O,Y
1-TR24	ET-306720	TR 2SA966 O,Y
1-TR25	ET-306719	TR 2SC2236 O,Y
1-TR26	ET-306720	TR 2SA966 O,Y
1-TR27,28	ET-325501	TR 2SA1015 O,Y
1-TR29	ET-310148	⚠ TR 2SD612K E,F
1-TR30,31	ET-307234	TR 2SC1815 Y,GR
1-TR32	ET-336941	⚠ TR 2SD313 E,F
1-TR33	ET-325501	TR 2SA1015 O,Y
1-TR34	ET-306720	⚠ TR 2SA966 O,Y
1-TR35	ET-336816	TR FET 2SK30A R
1-TR36	ET-325501	TR 2SA1015 O,Y
1-D1to3	ED-306724	D SILICON S5277B 100/1.0A
1-D4to7	ED-301911	D SILICON H DS448
1-D8,9	ED-306010	⚠ D ZENER H HZ6 A2
1-D10	ED-330989	⚠ D ZENER H HZ11 B2
1-D11	ED-306010	⚠ D ZENER H HZ6 A2
1-D12	ED-330989	D ZENER H HZ11 B2
1-D13	ED-322238	⚠ D SILICON 1B4B41 100/1.0A
1-D14	ED-306724	⚠ D SILICON S5277B 100/1.0A
1-VR1	EV-341225	R S-FIX H KVSF807U 3P 503
1-VR2	EV-336853	R S-FIX H KVSF807U 3P 103
1-VR3	EV-337924	R S-FIX H TM8KW3-3S 3P 0.30W 302
1-VR4	EV-337925	R S-FIX TM8KV3-3S 3P 0.30W 203
1-L1	EO-345922	COIL FIX 1 LAL03KH 47.00μH K
1-X1	EZ-348409	OSC CE CSB400P 0.4 MHZ
1-FR1	ER-200595	⚠ R FUSE ERD2FC F10 1/4W 5R6J
1-R34	ER-346171	R MF V CUT 1/4W 4703F
1-R36	ER-346172	R MF V CUT 1/4W 6801F
1-R37	ER-346174	R MF V CUT 1/4W 9101F
1-R38	ER-346134	R MF V CUT 1/4W 1002F
1-R110,112	ER-328067	⚠ R CB H SNP FS RDS 1/4W 331J
1-R120	ER-328067	⚠ R CB H SNP FS RDS 1/4W 331J
1-C23	EC-309115	C COMP V AWS 104J 50DC

REF. NO.	PARTS NO.	DESCRIPTION
	POWER P.C BOARD	
1B-SW1	ES-337898	⚠ SW SLIDE 00120163 01-2
1B-C1U	EC-320548	⚠ C CE V F 103Z 250AC(U,J,C)
1B-C1A	EC-314688	⚠ C CE V FZ 103P 125AC (A)
1B-C1E	EC-338411	⚠ C CE V FZ 103P 400AC (E,V,B,S)
	LOCATION SENSOR P.C BOARD (LED)	
1C-D1	ED-310340	D LED GL-350 INFRARED RAY
	LOCATION SENSOR P.C BOARD (TR)	
1D-PH1to3	ET-310341	TR PHOTO PT350 T
	LED P.C BOARD (A)	
1E-D1	ED-322247	D LED SLP-151D RED
1E-D2	ED-337892	D LED SLP-451D AMBER
	LED P.C BOARD (B)	
1F-D1	ED-337893	D LED SLP-144D01 RED
1F-D2	ED-337894	D LED SLP-444D01 AMBER
	SIZE SENSOR P.C BOARD (A)	
1G-PH1	ET-337891	TR PHOTO PH101
	SIZE SENSOR P.C BOARD (B)	
1H-PH1	ET-337891	TR PHOTO PH101

FINAL ASSEMBLY BLOCK





2. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1	BC-343067	CABINET
2-1S	BC-343067B	CABINET-S (AP-M5S)
2-2	TP-343060	INDICATOR LAMP
2-3	TP-343059	CLAMPER ARM
2-3S	TP-343059B	CLAMPER ARM-S (AP-M5S)
2-4	ZG-313181	SP C-4.5/0.35-16.0 C-028
2-5	ZS-343080	PLX PAN23×06STL CMT
2-6	TP-B343058	ARM ELEVATION PART
2-7	ZG-313168	SP C-3.5/0.35-8.0 C-016
2-8	SK-B343068	KNOB POWER PART
2-8S	SK-B343068B	KNOB POWER-S PART (AP-M5S)
2-9	ZG-313180	SP C-4.5/0.35-10.0 C-027
2-10	SA-336281B	INSULATOR (B)
2-11	ZS-325426	TAPPING ROLLER SCREW
2-12X	SP-343071	COVER BOTTOM
2-13	TP-337920	HINGE
2-14	SK-343061	KNOB CANCELLER
2-15	ZG-313195	SP C-5.5/0.5-10.0 C-042
2-16	ML-343053	LEVER CANCELLER
2-17	ZG-343052	SP TORSION CANCELLER
2-18	ZW-340648	RING CS190STL PKR
2-19	ZW-340648	RING CS190STL PKR
2-20X	BC-B343063	DUST COVER PART
2-20XS	BC-B343063B	DUST COVER-S PART (AP-M5S)
2-21	TP-343042	PLATTER
2-22	TP-343064B	TABLE SHEET (B)
2-23X	EF-300602	⚠ FUSE FST3100 T 250V 0.63A (F1)(E,V,B,S)
2-24X	EF-300602	⚠ FUSE FST3100 T 250V 0.63A (F2)(E,V,B,S)
2-25	EL-337901	PL CORD 16.0V 80MA 300/300 (PL901)
2-26	EP-337896	SOLENOID TDS-09SL-513 22V (SL901)
2-27	ES-337895	SW LEAF MSW-0094NBK 01-1 NO (SW902)
2-28	ZG-345747	SP PULL RETURN
2-29	ZS-434160	6SET30×030SCM PKR HP
2-30	EO-344170	COIL UNIT
2-31	TP-P1029A050A	MAGNET BLK AP-M5
2-32	TP-336273	CAM ADJUST
2-33	ZG-313001	SP T1-4.0/0.4-22.4 T1-114
2-34	ZS-356804	6SET30×040SCM PKR HP
2-35	SK-343062B	RUBBER BUTTON SHEET OPERATION (B)
2-35S	SK-343062D	RUBBER BUTTON SHEET OPERATION (B)-S (AP-M5S)
2-36	ZW-260370	RV NYL34×055 BL
2-37	ES-337902	⚠ SW PUSH SDLD1P 01-1 (SW901)
2-38U	BT-337904	⚠ TRANS POWER APT-5-70 (T901) (U)
2-38J	BT-337905	⚠ TRANS POWER APT-5-10 (T901) (J)
2-38C	BT-337906	⚠ TRANS POWER APT-5-30 (T901) (C)
2-38E	BT-337907	⚠ TRANS POWER APT-5-40 (T901) (E,V)
2-38B	BT-337908	⚠ TRANS POWER APT-5-50 (T901) (B,S)
2-38A	BT-347082	⚠ TRANS POWER APT-5-20 (T901) (A)
2-39	ZS-413302	PAN40×05STL CMT
2-40	SZ-343049	CUSHION TRANS
2-41	BM-P1029A100A	MAIN MOTOR BLK AP-M5 (M901)
2-42	SE-343070	ESCUTCHEON LED
2-42S	SE-343070B	ESCUTCHEON LED-S (AP-M5S)
2-43U	EW-374894	⚠ AC CORD 2 CORES VM-0129A J (U)
2-43J	EW-524845	⚠ AC CORD (J) 2.5M (J)
2-43C	EW-305691	⚠ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)
2-43E	EW-604618	⚠ AC CORD (EC) VM-0064 (E,V)
2-43B	EW-232244	⚠ AC CORD BASEC 2 CORE (B)
2-43S	EW-201515	⚠ AC CORD 2 CORES KP-560, LTSA-2F S (S)
2-44	EW-337900	CORD UL 3P AUDIO
2-45	EW-325489	CORD P-54-075 2P AUDIO(AP-M5S)
2-46	TP-337915	TONE ARM W/WHELL ARM-5
2-47	TP-780130	WEIGHT ASSY
2-48	TP-780131	SET KNOB ASSY
2-49	ZS-326795	SCREW, FLAT FILLISTER M2.6×7.8
2-50	ZW-326796	NUT, SLOTTED

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PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
BA-P1029A110A	1-1	EV-337924	1-VR3				
BA-P1029A110B	1-2	EV-337925	1-VR4				
BA-P1029A110C	1-3	EV-341225	1-VR1				
BA-P1029A110D	1-4	EW-201515	2-43S				
BA-P1029A110E	1-5	EW-232244	2-43B				
BA-P1029A110F	1-6	EW-305691	2-43C				
BA-P1029A110G	1-7	EW-325489	2-45				
BC-B343063	2-20X	EW-337900	2-44				
BC-B343063B	2-20XS	EW-374894	2-43U				
BC-343067	2-1	EW-524845	2-43J				
BC-343067B	2-1S	EW-604618	2-43E				
BM-P1029A100A	2-41	EZ-348409	1-X1				
BT-337904	2-38U	ML-343053	2-16				
BT-337905	2-38J	SA-336281B	2-10				
BT-337906	2-38C	SE-343070	2-42				
BT-337907	2-38E	SE-343070B	2-42S				
BT-337908	2-38B	SK-B343068	2-8				
BT-347082	2-38A	SK-B343068B	2-8S				
EC-309115	1-C23	SK-343061	2-14				
EC-314688	1B-C1A	SK-343062B	2-35				
EC-320548	1B-C1U	SK-343062D	2-35S				
EC-338411	1B-C1E	SP-343071	2-12X				
ED-301911	1-D4to7	SZ-343049	2-40				
ED-306010	1-D8,9	TP-B343058	2-6				
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ED-322247	1E-D1	TP-343059	2-3				
ED-330989	1-D10	TP-343059B	2-3S				
ED-330989	1-D12	TP-343060	2-2				
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ED-337894	1F-D2	TP-780131	2-48				
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EF-300602	2-24X	ZG-313168	2-7				
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EI-201940	1-IC4	ZG-313181	2-4				
EI-337890	1-IC3	ZG-313195	2-15				
EI-337903	1-IC2	ZG-343052	2-17				
EI-338390	1-IC5	ZG-345747	2-28				
EL-337901	2-25	ZS-325426	2-11				
EO-344170	2-30	ZS-326795	2-49				
EO-345922	1-L1	ZS-343080	2-5				
EP-337896	2-26	ZS-356804	2-34				
ER-200595	1-FR1	ZS-413302	2-39				
ER-328067	1-R110,112,120	ZS-434160	2-29				
ER-346134	1-R38	ZW-260370	2-36				
ER-346171	1-R34	ZW-326796	2-50				
ER-346172	1-R36	ZW-340648	2-18				
ER-346174	1-R37	ZW-340648	2-19				
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ES-337898	1B-SW1						
ES-337902	2-37						
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ET-306719	1-TR5						
ET-306719	1-TR23						
ET-306719	1-TR25						
ET-306720	1-TR6						
ET-306720	1-TR24						
ET-306720	1-TR26						
ET-306720	1-TR34						
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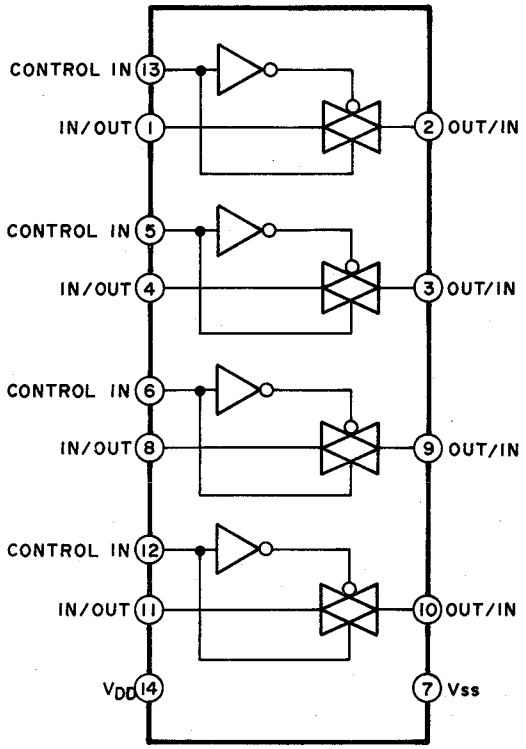
ET-307234	1-TR19to21						
ET-307234	1-TR22						
ET-307234	1-TR30,31						
ET-310148	1-TR29						
ET-310341	1D-PH1to3						
ET-325501	1-TR3,4						
ET-325501	1-TR7to11						
ET-325501	1-TR18						
ET-325501	1-TR27,28						
ET-325501	1-TR33						
ET-325501	1-TR36						
ET-336816	1-TR35						
ET-336941	1-TR32						
ET-337891	1G-PH1						
ET-337891	1H-PH1						
EV-336853	1-VR2						

SECTION 3

SCHEMATIC DIAGRAM

1. SCHEMATIC DIAGRAM OF ICs 32
2. AP-M5/S (TURNTABLE) NO. 830120A SCHEMATIC DIAGRAM 33

LC4016B



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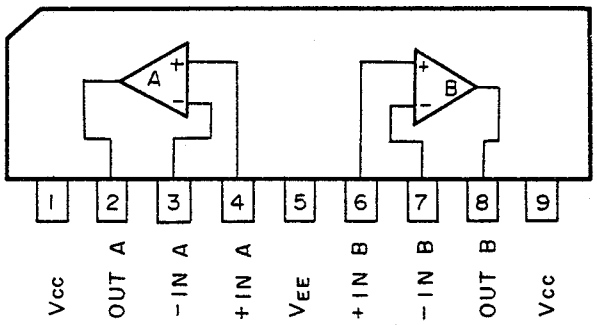

AP-M5/S

LOCATION SENSOR PCB (LED) P1029B501D

LOCATION SENSOR PCB (TR) P1029B501E

SIZE SENSOR PCB(B) P1029B501I

SIZE SENSOR PCB(A) P1029B501H

*	C1	T 901
C	0.01/250AC(Z)	APT-5-20
A	0.01/125AC	
E,V	0.01/400AC(P)	APT-5-40
S,B	0.01/400AC(P)	APT-5-50
J	0.01/250AC(Z)	APT-5-10

C,A AC120V 60Hz
E,V AC220V 50Hz
S,B AC240V 50Hz
J AC100V 50/60Hz

POWER PCB P1029B501B

INTERMEDIATE PCB P1029B501C

KEY BOARD PCB P1029B501J

LED PCB (A) P1029B501F

LED PCB(B) P1029B501G

SERVO SYSCON PCB P1029B501A

POWER PCB P1029B501B

MAIN MOTOR

IC1 NJM4558S

IC2 LC4016B

IC3 LM6405A-099

IC4 NJM4558S

IC5 LA6485S

PLUNGER DRIVE

ARM MOTOR DRIVE

LAMP DRIVE

MOTOR FG SPEED CONTROL

MAIN MOTOR DRIVE

POWER SUPPLY

= B (POWER SUPPLY) LINE

2SA1015 2SC1815 (E C B)

2SA966 2SC2236 (E C B)

2SD612K (E C B)

2SD313 (B C E)

2SK30A (S G D)

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W(J)
ALL CAPACITORS IN μF 50WV(M)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA
(FS)=FAIL SAFE RESISTORS

(TURNTABLE)
AP-M5/S
SCHEMATIC DIAGRAM
NO. 830120A

001337C